

STN
HCAPLUS, INSPEC, JAPIO, USPATALL

4/8/03

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L11 ANSWER 1 OF 1 USPATFULL

AB Saturable absorption, polarization, and retroreflection are integrated into a single solid-state optical element. The optical element comprises an undoped substrate having front and rear surfaces disposed at a predetermined angle. A dielectric coating is disposed on the rear surface of the substrate, and at least one saturable absorber platelet is disposed on the front surface of the substrate. The saturable absorbing species used in the platelet(s) are either F.sub.2 - color-centers in lithium fluoride or Cr.sup.4+ dopant ions in one of several suitable host optical materials. Linear polarization of the laser beam is achieved by orienting the input face of the optical element at Brewster's angle. The dielectric coating (mirror) on the back surface of the optical element provides 100% reflectivity. The optical element is a monolithic, simple to fabricate, easy to align multi-functional element for use in a laser resonator. The optical element provides passive Q-switching, discrimination for linear polarization, and laser beam reflection. The mirror is an integral part of the optical element, and it is easy to align the integrated polarizer. By aligning the optical element for retroreflection, the Brewster's angle condition is automatically met and optimal polarization discrimination is achieved. The optical element improves the quality and efficiency of lasers in which it is employed. The present invention is easy to align and reduces the number of optical elements in the laser, thereby improving system reliability.

AN 94:31704 USPATFULL

TI Quasi-monolithic saturable optical element

IN Sumida, David S., Los Angeles, CA, United States

PA Hughes Aircraft Company, Los Angeles, CA, United States (U.S. corporation)

PI US 5303256 19940412

AI US 1993-30763 19930312 (8)

DT Utility

FS Granted

EXNAM Primary Examiner: Lee, John D.; Assistant Examiner: Wise, Robert E.

LREP Lachman, M. E., Sales, M. W., Denson-Low, W. K.

CLMN Number of Claims: 11

ECL Exemplary Claim: 1

DRWN 3 Drawing Figure(s); 2 Drawing Page(s)

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(FILE 'HOME' ENTERED AT 12:34:22 ON 02 APR 2003)

FILE 'HCAPLUS, INSPEC, JAPIO, USPATFULL, USPAT2' ENTERED AT 12:34:39 ON 02 APR 2003

L1 692949 S (ARTICLE#)
L2 677104 S (FORM? OR PRODUC? OR MANUFACTUR? OR CREAT?) (8A) (SUBSTRATE#)
L3 2002050 S (SUBSTRATE#)
L4 0 S (BIEU3(W) FEGA5(W) O12)
L5 0 S (BIEU) (W) 3 (W) (FE5-Y) (W) (GAXAL1-X)
L6 437591 S (SINGLE OR MONO) (8A) (CRYSTAL?)
L7 55586 S (GARNET)
L8 112 S L1 AND L2 AND L6 AND L7
L9 42 S (GADOLINIUM(W) SCANDIUM(W) GALLIUM(W) GARNET AND GADOLINIUM(W) SC
L10 0 S (GADOLINIUM(W) SCANDIUM(W) GALLIUM(W) GARNET AND TERBIUM(W) SCAND
L11 1 S L8 AND L9